

WHAT IS CLAIMED IS:

Sub
A2

1. An etching method configured to make a through hole by etching an object to be etched from one of major surfaces thereof by dry etching, comprising:

5 said dry etching being conducted under the condition where a conductor with a higher electric conductivity than that of said entity is in contact with said entity at least in or near a location for making said through hole.

10 2. The etching method according to claim 1 wherein said entity to be etched is made of a semiconductor.

15 3. The etching method according to claim 1 wherein said entity to be etched is made of silicon.

20 4. The etching method according to claim 1 wherein said conductor is a metal.

25 5. The etching method according to claim 1 wherein said conductor is a conductor film formed on the entire surface of said other surface of said entity to be etched.

 6. The etching method according to claim 1 wherein said conductor is a conductor film formed on a

location of said other surface of said entity near the region for making said through hole.

7. The etching method according to claim 1 wherein said conductor is a metal having a low melting point.

8. The etching method according to claim 1 wherein said through hole is made by setting said conductor with a low melting point on a wafer stage in a dry etching apparatus; maintaining said wafer stage at a temperature not lower than the melting point of said conductor to melt said conductor and putting a wafer as said entity thereon; fixing said wafer onto said wafer stage by lowering temperature of said wafer stage to a level lower than the melting point of said conductor, and thereafter conducting said dry etching of said wafer.

9. The etching method according to claim 1 wherein said through hole is made by setting said conductor with a high melting point on a wafer stage in a dry etching apparatus; maintaining said wafer stage at a temperature not lower than the melting point of said conductor to melt said conductor and putting a wafer as said entity thereon; and hereunder conducting said dry etching of said wafer.

Sub A3
10. The etching method according to claim 1 wherein said dry etching is conducted by using SF₆ gas and C₄F₈ gas.

5 11. The etching method according to claim 1 wherein said dry etching uses ions.

12. The etching method according to claim 1 wherein said dry etching is reactive ion etching.

10 13. The etching method according to claim 1 wherein said through hole has an aspect ratio not smaller than 3.

15 14. The etching method according to claim 1 wherein said through hole has an aspect ratio not smaller than 5.

20 15. The etching method according to claim 1 wherein said through hole has an aspect ratio not smaller than 8.

25 16. The etching method according to claim 1 wherein said through hole has an aspect ratio not smaller than 10.

17. A manufacturing method of a structure

including a step of making a through hole by etching an object to be etched from one of major surfaces thereof by dry etching, comprising:

5 said dry etching being conducted under the condition where a conductor with a higher electric conductivity than that of said entity is in contact with said entity at least in or near a location for making said through hole.

10 18. The manufacturing method of a structure according to claim 17 wherein said entity to be etched is made of a semiconductor.

15 19. The manufacturing method of a structure according to claim 17 wherein said entity to be etched is made of silicon.

20 20. The manufacturing method of a structure according to claim 17 wherein said conductor is a metal.

25 21. The manufacturing method of a structure according to claim 17 wherein said conductor is a conductor film formed on the entire surface of said other surface of said entity to be etched.

22. The manufacturing method of a structure

according to claim 17 wherein said conductor is a conductor film formed on a location of said other surface of said entity near the region for making said through hole.

5

23. The manufacturing method of a structure according to claim 17 wherein said conductor is a metal having a low melting point.

10

24. The manufacturing method of a structure according to claim 17 wherein said through hole is made by setting said conductor with a low melting point on a wafer stage in a dry etching apparatus; maintaining said wafer stage at a temperature not lower than the melting point of said conductor to melt said conductor and putting a wafer as said entity thereon; fixing said wafer onto said wafer stage by lowering temperature of said wafer stage to a level lower than the melting point of said conductor, and thereafter conducting said dry etching of said wafer.

20

25. The manufacturing method of a structure according to claim 17 wherein said through hole is made by setting said conductor with a high melting point on a wafer stage in a dry etching apparatus; maintaining said wafer stage at a temperature not lower than the melting point of said conductor to melt said conductor

25

and putting a wafer as said entity thereon; and
hereunder conducting said dry etching of said wafer.

5 26. The manufacturing method of a structure
according to claim 17 wherein said dry etching is
conducted by using SF₆ gas and C₄F₈ gas.

10 27. The manufacturing method of a structure
according to claim 17 wherein said dry etching uses
ions.

15 28. The manufacturing method of a structure
according to claim 17 wherein said dry etching is
reactive ion etching.

20 29. The manufacturing method of a structure
according to claim 17 wherein said through hole has an
aspect ratio not smaller than 3.

25 30. The manufacturing method of a structure
according to claim 17 wherein said through hole has an
aspect ratio not smaller than 5.

31. The manufacturing method of a structure
according to claim 17 wherein said through hole has an
aspect ratio not smaller than 8.

32. The manufacturing method of a structure according to claim 17 wherein said through hole has an aspect ratio not smaller than 10.

add
P57